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PTO/SB/21 (02-04)
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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/550,505
Filing Date	April 17, 2000
First Named Inventor	Donald C.D. Chang, et al.
Art Unit	2663
Examiner Name	Derrick W. Ferris
Attorney Docket Number	PD-990185

Total Number of Pages in This Submission

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
- [x] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] After Allowance communication to Technology Center (TC)
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):

  Appendix A attached to Appeal Brief

Remarks

CUSTOMER NO. 020991

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Georgann S. Grunebach, Registration No. 33,179
Signature	
Date	September 9, 2004

CERTIFICATE OF TRANSMISSION/MAILING

EXPRESS MAIL Mailing Number: EI568453966US **Date of Deposit:** September 9, 2004

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Typed or printed name	Georgann S. Grunebach, Registration No. 33,179		
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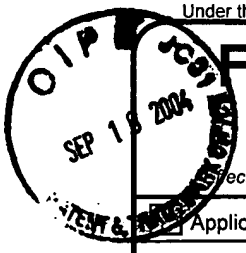

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($) 330.00

Complete if Known	
Application Number	09/550,505
Filing Date	April 17, 2000
First Named Inventor	Donald C.D. Chang, et al.
Examiner Name	Derrick W. Ferris
Art Unit	2663
Attorney Docket No.	PD-990185

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☑ Deposit Account:

Deposit Account Number: 50-0383

Deposit Account Name: Hughes Electronics Corp

The Director is authorized to: *(check all that apply)*

☑ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) or any underpayment of fee(s)

☑ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($) -0-

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below	Fee Paid
Total Claims		-20** =		X	=
Independent Claims		- 3** =		X	=
Multiple Dependent					=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) -0-

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330.00
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 330.00

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	Georgann S. Grunebach	*Registration No. (Attorney/Agent)*	33,179	*Telephone*	310.964.4615
Signature				*Date*	September 9, 2004

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

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Georgann S. Grunebach
(Typed name of person mailing correspondence)

(Signature of person mailing correspondence)

Customer Number 020991

Patent
PD-990185

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In Re Application of: Donald C. D. Chang, et al.		Date: September 9, 2004
Serial No.:	09/550,505	Group Art Unit: 2663
Filed:	04/17/2000	Examiner: Ferris, Derrick W.
For:	COHERENT SYNCHRONIZATION OF CODE DIVISION MULTIPLE ACCESS SIGNALS	

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

The following Appeal Brief is submitted pursuant to the Notice of Appeal filed on July 13, 2004, for the above-identified application.

09/13/2004 SDENBOB1 00000010 500383 09550505
01 FC:1402 330.00 DA

I. Real Party in Interest

The real party in interest in this matter is The DirecTV Group, Inc of El Segundo, California which is 34 percent owned by Fox Entertainment Group, which is approximately 82 percent owned by The News Corporation, Limited.

II. Related Appeals and Interferences

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of the Claims

Claims 1-12 stand rejected in the Final Office Action. There have been no amendments filed subsequent to the final rejection.

IV. Summary of the Invention

The present invention is illustrated in Figure 1 illustrating users 102, 112, transponders 106 and 108, and a hub or gateway 104. The present invention transmits signals to the users 102 and 112. In a return link the user terminals insert a time that the signal was received from the gateway 104 and transmitted back to the gateway. The gateway uses the time delays to transmit subsequent signals through multiple transponders so that coherent signals which are added together at the user increase the signal-to-noise ratio. The delays will thus take into account the difference in the paths from the different transponder platforms 106, 108. One advantage of the present system is that a simple user terminal may be formed that merely inserts the time at which the various signals are received into a response signal. Thus, no complicated looping or synchronization schemes are required. The gateway station takes into account the time the signals were received by the user terminal in the subsequent transmissions.

More specifically, Claim 1 is directed to a method for synchronizing a CDMA communications signal that includes transmitting a sequence of forward link CDMA signals from a gateway to an intended subscriber through *multiple transponder platforms* wherein the forward link CDMA signals comprise ranging and calibration data representative of the time each forward link CDMA signal was transmitted from the gateway to each transponder platform. The method further includes receiving a sequence of return link CDMA signals from the intended subscriber wherein the return link CDMA signals comprise ranging and calibration data representative of the time each forward link CDMA signal was received by the intended subscriber from each transponder platform and finding corresponding time for transmitting subsequent CDMA signals from the gateway to each transponder platform so that subsequent CDMA signals from the multiple transponder platforms arrive at the intended subscriber in substantially the same phase. One feature of the invention is that it is used for CDMA signals. Another feature of the invention is that the intended use is for multiple transponder platforms. In the step of receiving a sequence of return link CDMA signals, the return link CDMA signals comprise ranging and calibration data representative of the time *each* forward link CDMA signal was received by the intended subscriber from *each* transponder platform.

V. Issues

The following issues are presented in this response, each of which correspond directly to the Final Office Action, dated April 30, 2004:

Whether Claims 1, 4, 5, 7-9, 11, 13-18, 21-22, and 25-37 are patentable under 35 U.S.C. § 103(a) over *Dunn* (3,742,498) in view of *Gilhousen* (4,901,307).

Whether claims 2-4, 6-7 and 9-11 are patentable under 35 U.S.C. § 103(a) over *Dunn* in view of *Gilhousen* as applied to claims 1, 5, 8, and 12, in further view of *Dunn* 3,593,138.

Whether claims 2-4, 6-7 and 9-11 are patentable under 35 U.S.C. § 103(a) over *Dunn* in view of *Gilhousen* as applied to claims 1, 5, 8, and 12, in further view of *Witsaman* (5,416,808).

VI. Grouping of Claims

The rejected claims have been grouped together in each of their rejections. The Appellant states, however, that each of the rejected claims stands on its own recitation and is separately patentable for the reasons set forth in detail below.

VII. Argument

A. CLAIMS 1, 5, 8 AND 12 STAND REJECTED UNDER 35 U.S.C. § 103(A) OVER *DUNN* IN VIEW OF *GILHOUSEN.*

The Examiner points to the *Dunn* reference for synchronizing communications. The synchronization in the *Dunn* reference teaches that synchronization is used for a TDM multiple access communication system. As is explained in Col. 6, lines 5-12, the ultimate goal is to enable the adjustment of the transmit timer contained in the aircraft to assure that transmission bursts from that particular aircraft occur in the proper time slot of the TDM frame format. TDM type communications deal with time slots and thus the *Dunn* reference is directed to aligning the timing with the time slots. The Examiner points to Col. 5, lines 59-67, and Col. 6, lines 1-13, for teaching time and phase differences are measured by the ground station. It should be noted that these passages refer to Fig. 1. Although Fig. 1 illustrates two satellite carrying repeaters 42, 43, only one repeater is used in the system described in those passages. The second satellite 43 may also be used but performs a parallel function with that of satellite 42. Thus, the two satellites do not act together but act as two separate measurements. Therefore, the *Dunn* reference does not teach or suggest a sequence of forward link CDMA signals from a gateway to an intended subscriber via multiple transponder platforms. The *Dunn* reference is quite different in this respect. The operation of the *Dunn* reference is described more completely in Col. 5, lines 48 through Col. 6, line

13. Further, the *Dunn* reference does not receive a sequence of return link CDMA signals from the intended subscriber when the return link CDMA signals comprise ranging and calibration data representative of the time each forward link CDMA signal was received by the intended subscriber from each transponder platform. Therefore, the second step of claim 1 is also not taught or suggested in the *Dunn* reference.

Appellants admit that the *Dunn* reference does describe that the phase difference between the transmitted master synch and the master synch received from the satellite is a measure of the range between satellite 42 and ground station 40. *Dunn* uses the phase difference to determine the necessary timing and the range from the aircraft to the satellite. The *Dunn* reference is different in that the master station transmits a master or reference synch burst signal through the satellite to each of the aircraft. Each of the aircraft then transmits a pseudo noise code ranging signal through the satellite and to the master station. The master station also receives the master synch signal from the repeater of the satellite. Thus, the phase difference between the signal that goes only to the satellite and back and the signal that goes through the satellite to the aircraft and back through the satellite to the master station is determined. Claim 1 recites transmitting a sequence of forward link CDMA signals from a gateway to an intended subscriber via multiple transponder platforms and receiving a sequence of return link CDMA signals from the intended subscriber. The signals that are transmitted have data representative of the time each forward link was transmitted by the gateway to the transponder platform wherein the ranging and calibration data in the receiving step is representative of the time each forward link was received by the intended subscriber from the transponder platform. Thus, from the ranging and calibration data the corresponding time for transmitting subsequent CDMA signals is determined. The Examiner admits that the *Dunn* reference does not specifically state that the multiple satellites used would send the signals to the aircraft such that they would arrive in the same phase with each other. The Examiner cites the *Gilhousen* reference for this proposition. The *Gilhousen* reference does not teach or suggest the elements described above that are missing from the

Dunn reference. Although the *Gilhousen* reference teaches that signal can constructively add together in Col. 19, lines 53-65, the *Gilhousen* reference does not teach or suggest transmitting a sequence of forward link CDMA signals to an intended subscriber via multiple transponder platforms wherein the forward link CDMA signals comprise ranging and calibration data representative of the time each forward link CDMA signal was transmitted from the gateway to the transponder platform. Further, the *Gilhousen* reference does not receive a sequence of return link CDMA signals from the intended subscriber wherein the link CDMA signals comprise ranging and calibration data representative of the time each forward link CDMA signal was received by the intended subscriber from each transponder. Also, no corresponding time for transmitting subsequent CDMA signals is determined from the ranging and calibration data.

On page 3, lines 4 and 5, the Examiner states, "It thus appears that the applicant only considered the reference in singular and not taught in combination as the previous examiner had done." However, Appellants respectfully submit that even when the references are combined, all the elements are not found in the two references. One advantage of the invention is that by simplifying the receive process in that the user terminals are only required to send the time the transmission is received back to the gateway so that the gateway may perform the synchronization, a lower cost terminal may be provided. Providing a lower cost terminal will help to increase the proliferation of the system. Because of the deficiencies noted above, namely that when combined the two references do not teach or suggest the present invention, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 1.

Claim 5 is dependent upon claim 1 and is believed to be independently patentable. The combination of claim 5 together with the elements of claim 1 are not taught or suggested in the combination of references.

Claim 8 is an independent claim directed to an apparatus for synchronizing a CDMA communication signal. The claim recites a transmitter for transmitting the sequence of

forward link CDMA signals from a gateway to an intended subscriber via multiple transforms wherein the forward link CDMA signals comprise ranging calibration data representative of the time each forward link CDMA signal was transmitted by the gateway to the transponder platform. A receiver receives a sequence of return link CDMA signals for the intended subscriber to the gateway via the multiple transponder platforms wherein the return link CDMA signals comprise ranging calibration data representative of the time each forward link CDMA signal was received by the intended subscriber from each transponder platform. A CDMA signal sequencer is also set forth in claim 8 for delaying the transmission of each subsequent CDMA signal to the intended subscriber so that each subsequent CDMA signal arrives at the intended subscriber from each transformer in substantially the same phase.

Claim 8 is similar to claim 1 and is believed to be allowable for the same reasons set forth above. More specifically, claim 8 recites that the return link comprises ranging calibration data representative of the time each forward link CDMA signal was received by the intended subscriber from each transponder platform. As mentioned above, this allows the transmission to be delayed so that each of the signals subsequently received by the user are increase the signal-to-noise ratio.

Claim 12 is also independently patentable. Claim 12 recites the CDMA signals arrived at the unintended subscriber from each transform at substantially different time frequency or phase. This in combination with claim 8 is not taught or suggested in the references cited.

B. THE REJECTION OF CLAIMS 2-4 and 9-11 UNDER 35 U.S.C. § 103(a) OVER *DUNN* IN VIEW OF *GILHOUSEN* IN FURTHER VIEW OF *DUNN*

Claims 2-4 depend from claim 1. Claims 9-11 depend from claim 8. Thus the dependent claims have the deficiencies described above with respect to respective claims 1 and 8. Appellants have reviewed the *Dunn* reference '138 and find no teaching or suggestion for the missing elements. That is, the *Dunn* reference '138 does not teach or

suggest transmitting a sequence of forward link CDMA signals from a gateway to an intended subscriber via multiple transponder platforms wherein the forward link CDMA signals comprise ranging and calibration data representative of the time each forward link CDMA signal was transmitted from the gateway to each transponder platform. The *Dunn* reference '138 also fails to teach or suggest the missing step of receiving a sequence of return CDMA signals from the intended subscriber wherein the return link CDMA signals comprise ranging and calibration data representative of the time each forward link CDMA signal was received by the intended subscriber from each transponder platform. Thus, Appellants respectfully believe claims 2-4 and 9-11 are allowable for the reasons set forth above.

C. THE REJECTION OF CLAIMS 2-4 and 9-11 UNDER 35 U.S.C. § 103(a) OVER *DUNN* IN VIEW OF *GILHOUSEN IN FURTHER VIEW OF WITSAMAN*

Claim 6 is an independent method claim that uses multiple transponder platforms. As described above, the *Dunn* and *Gilhousen* references do not teach or suggest the use of multiple transponder platforms that are used to transmit a ranging signal from a gateway to a subscriber. The *Witsaman* reference also fails to teach multiple transponder platforms. The use of the multiple transponder platforms is carried through in several steps of the claims. For example, claim 6 includes the step of "transmitting signal timing and offset information from the subscriber to the gateway via each transponder platform." Also, claim 6 recites the step of computing relative signal timing and phase data from the signal timing and phase offset information for the subscriber and each transponder platform. Claim 6 also recites the step of computing relative motion statistics of each transponder platform relative to the subscriber from the signal timing and phase data. Further, claim 6 recites averaging the signal timing and phase data for the subscriber and each transponder platform to calculate a subscriber reference clock correction. The final step of claim 6 is transmitting the subscriber reference clock correction from the gateway to the subscriber to synchronize the subscriber

reference clock so that the subscriber receives subsequent CDMA signals transmitted concurrently from the gateway to the subscriber via each transponder platform in substantially the same phase. Thus, as can be seen, the multiple transponder platform idea is carried through claim 6. The use of the multiple transponder platforms along with the other limitations are not taught or suggested in either of the three references.

Claim 7 is dependent upon claim 6 and is also believed to be independently patentable. Claim 7 recites that an unintended subscriber receives the CDMA signals at a different time, phase or frequency. Claim 7 is also believed to be allowable for the same reasons set forth above.

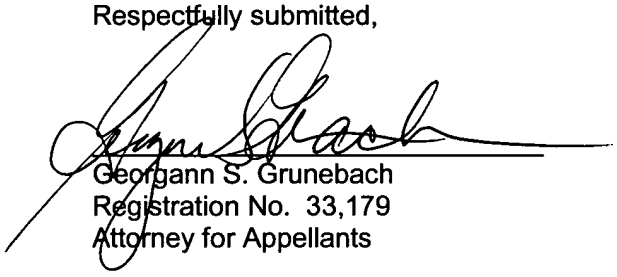
VIII. Appendix

A copy of each of the claims involved in this appeal, namely claims 1-12, is attached hereto as Appendix A.

IX. Conclusion

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw his rejections and pass this case to issuance.

Respectfully submitted,



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Attorney for Appellants

Date: September 9, 2004

The DIRECTV Group, Inc.
RE / R11 / A109
P.O. Box 956
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APPENDIX A

1. A method for synchronizing a CDMA communications signal including the following steps:

transmitting a sequence of forward link CDMA signals from a gateway to an intended subscriber via multiple transponder platforms wherein the forward link CDMA signals comprise ranging calibration data representative of the time each forward link CDMA signal was transmitted from the gateway to each transponder platform;

receiving a sequence of return link CDMA signals from the intended subscriber wherein the return link CDMA signals comprise ranging calibration data representative of the time each forward link CDMA signal was received by the intended subscriber from each transponder platform;

and finding a corresponding time from the ranging calibration data for transmitting subsequent CDMA signals from the gateway to each transponder platform so that subsequent CDMA signals from the multiple transponder platforms arrive at the intended subscriber in substantially the same phase.

2. The method of claim 1 wherein the step of finding a corresponding time for transmitting subsequent CDMA signals includes the step of calculating a time shift of the return link CDMA signal relative to the forward link CDMA signal.

3. The method of claim 1 wherein the step of finding a corresponding time for transmitting subsequent CDMA signals includes the step of calculating a frequency shift of the return link CDMA signal relative to the forward link CDMA signal.

4. The method of claim 1 wherein the step of finding a corresponding time for transmitting subsequent CDMA signals includes the step of calculating a phase shift of the of the return link CDMA signal relative to the forward link CDMA signal.

5. The method of claim 1 wherein CDMA signals arrive at an unintended subscriber from each transponder platform at a substantially different time, frequency, or phase.

6. A method for synchronizing a CDMA communications signal including the following steps: transmitting a ranging signal from a gateway to a subscriber via multiple transponder platforms; computing a signal propagation time relative to a subscriber local reference clock;

transmitting signal timing and phase offset information from the subscriber to the gateway via each transponder platform;

computing relative signal timing and phase data from the signal timing and phase offset information for the subscriber and each transponder platform;

computing relative motion statistics of each transponder platform relative to the subscriber from the signal timing and phase data;

averaging the signal timing and phase data for the subscriber and each transponder platform to calculate a subscriber reference clock correction;

and transmitting the subscriber reference clock correction from the gateway to the subscriber to synchronize the subscriber reference clock so that the subscriber receives subsequent CDMA signals transmitted concurrently from the gateway to the subscriber via each transponder platform in substantially the same phase.

7. The method of claim 6 wherein CDMA signals arrive at an unintended subscriber from each transponder platform at a substantially different time, frequency, or phase.

8. An apparatus for synchronizing a CDMA communications signal comprising:

a transmitter for transmitting a sequence of forward link CDMA signals from a gateway to an intended subscriber via multiple transponder platforms wherein the forward link CDMA signals comprise ranging calibration data representative of the time each forward link CDMA signal was transmitted by the gateway to each transponder platform;

a receiver for receiving a sequence of return link CDMA signals from the intended subscriber to the gateway via the multiple transponder platforms wherein the return link CDMA signals comprise ranging calibration data representative of the time each forward link CDMA signal was received by the intended subscriber from each transponder platform;

and a CDMA signal sequencer for delaying the transmission of each subsequent CDMA signal to the intended subscriber so that each subsequent CDMA signal arrives at the intended subscriber from each transponder platform in substantially the same phase.

9. The apparatus of claim 8 further comprising a time shift calculator coupled to the CDMA signal sequencer for calculating a time shift of the return link CDMA signal relative to the forward link CDMA signal.

10. The apparatus of claim 8 further comprising a frequency shift calculator coupled to the CDMA signal sequencer for calculating a frequency shift of the return link CDMA signal relative to the forward link CDMA signal.

11. The apparatus of claim 8 further comprising a phase shift calculator coupled to the CDMA signal sequencer for calculating a phase shift of the of the return link CDMA signal relative to the forward link CDMA signal.

12. The apparatus of claim 8 wherein CDMA signals arrive at an unintended subscriber from each transponder platform at a substantially different time, frequency, or phase.